GEOGRAPHIC NEWS BULLETINS

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Photograph by Airmap Corporation

NIAGARA IS ALMOST A SYNONYM FOR "WATERFALL"

Perhaps the best known and most visited of all the major waterfalls of the world, Niagara ranks far down the list in actual height (167 feet) but is high in beauty, both in the summer and in the winter. This aerial view shows the recently destroyed Falls View International Bridge that linked Canada (right) with the United States (left). Goat Island (upper left center) separates the American from the Canadian or Horseshoe Falls (Bulletin No. 1).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Niagara Falls, Famous for Ice as Well as Water

ICE made news where water generally makes scenery at Niagara Falls last month, when a record jam of broken cakes and slabs of ice in the Niagara River gorge swept against the supports of the Falls View International Bridge, buckling its steel girders and collapsing the historic "Honeymoon Span" (illustration, cover).

Thousands upon thousands of former visitors, including many newlyweds, who have in summertime sailed the "stormy, spray-swept sea" below the Falls on the good ships *Maid of the Mist*, were also concerned by reports that the rising tide of ice floes had entered the drydock where the twin vessels are stored during winter months, lifting them from their moorings and damaging one of the boats.

Others affected by this sudden return of the ice age to Niagara were several power plants. Electrical production was reduced by loose ice that clogged the water channels which provide energy for dynamos.

Mid-Winter Generally a Period of White Calm

Niagara on a mid-winter rampage is an unusual spectacle. Generally at this time of the year, the Falls and much of the rapids in the lower gorge are frozen nearly to a standstill. Lovers of winter beauty come by train to view this wonderland of white calm and snowy majesty. Only two years ago the American Falls, for the first time in many years, was completely stopped. Ice jams above the Falls had cut the flow of water to a mere trickle, which froze in tall organ pipes of white ice when it reached the great cataract (illustration, next page).

On Goat Island, which divides the American from the Canadian, or Horseshoe Falls, and along the cliffsides, the whirling clouds of mist and spray freeze in patterns of surpassing loveliness. The snow magician plays queer pranks on trees and foliage encrusted with glistening beads of frost. Sometimes bushes and small evergreens look like white-mantled gnomes, bending under their wintry burdens.

After a prolonged cold spell, the scene directly below the Falls is one of Arctic grandeur. Outlines of sharp rocks and irregular boulders are softened by layer upon layer of frozen spray, until the effect is that of well-weathered mountains, backed by a curtain of enormous icicles 50 or more feet in height. When a mantle of new snow is draped over the big basin below the Falls it becomes a veritable winter fairyland of dazzling white and deep blue shadows.

Not the Only Link Between U. S. and Canada Here

The bridge which figured in the news dispatches was a favored vantage point from which to view and to photograph the Falls, both in summer and in winter. Completed in 1898, it had a central arch of 840 feet, and an overall length of about a fifth of a mile. The third bridge on this site, it was the nearest to the Falls. Disaster also struck the first bridge, which was erected in 1867 and blown down in a windstorm in 1889.

Traffic between the United States and Canada will not be interrupted by the destruction of the Falls View International Bridge. A little farther downstream are a railroad bridge and also a combination railroad and highway span, neither of which has been damaged. At the foot of the gorge, a suspension bridge links Queenston and Lewiston, while at Buffalo the new Peace Bridge carries traffic between that city and Fort Erie, Ontario.

Note: Additional pictures of Niagara Falls and the Gorge will be found in "New York—

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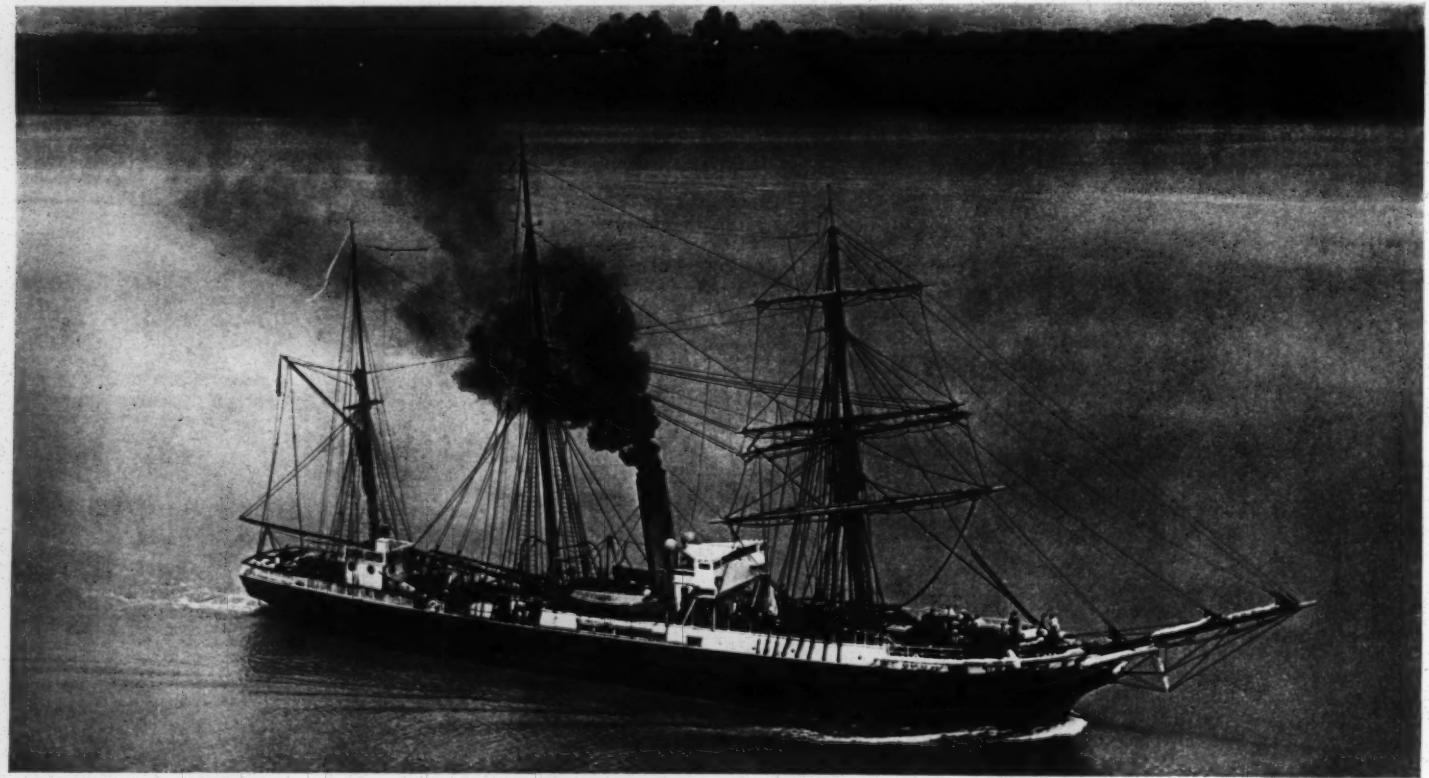

Photograph by Willard R. Culver

SYMBOLS OF TWO "FIRST" HEROES ON THE HISTORIC POTOMAC

Through the trees shows Mount Vernon, home and burial place of George Washington—"first in war, first in peace." The *Bear of Oakland*, barkentine flagship of the Byrd Antarctic Expedition II, in 1935 sailed up the Potomac to Washington with expedition members and Admiral Byrd, first to fly over both the North and the South Poles. The white blob on the prow of the ship is the figurehead, a big white wooden bear (Bulletin No. 4).

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Roll Call of American Birds in The Society's Explorers' Hall

"BIRDS I have always envied," wrote Rex Brasher, white-haired hermit, after fifty years of studying and painting birds. "Long ago, when I tried to catch a sparrow, well do I remember my amazement that it escaped into the air. As years brought better acquaintance, admiration for their beauty and courage was added to astonishment."

This wonder and delight were revealed in Mr. Brasher's bird paintings, which were on exhibit at the Washington, D. C., headquarters of the National Geographic Society, January 24 to February 5. Visitors from 25 States, Alaska, and several foreign countries viewed the exhibit.

Indoor Bird Walk Taken by Nuns, Mailman, School Children, and Judge

Explorers' Hall was transformed into a veritable picture-aviary. The spacious Hall contained 874 water colors showing 3,000 birds, about 90 per cent of them lifesize. The National Geographic's exhibit, the first to show all of Mr. Brasher's paintings, was a complete roll call of the whole North American continent's bird families. Including all the 1,200 major species and sub-species of the check list of the American Ornithologists' Union, the collection is almost unique in the completeness of its portrayal of kinds of birds found in North America.

An interesting sideshow of the exhibit was a set of the 12 volumes of *Birds and Trees of North America,* in which the original paintings were reproduced by a gravure process and hand colored by Mr. Brasher himself. Just 100 sets have been printed, and only 16 of them remain—valued at from $4,250 to $10,000 the set.

Among the hundreds of visitors was a postman, who dropped in to identify some of the birds he studied while tramping his daily route. Two nuns, white-coifed and black-robed, stood quietly before the rusty blackbird, which is actually resplendent with green, blue, and red sheen on his yellow-tipped black feathers. A troop of Girl Scouts "worked" their way through the exhibit, identifying bird friends acquired in Merit Badge efforts. Two young ladies sketched the yard-square painting of five flashing blue jays against autumn foliage, while a younger artist tried his skill at copying a red-tailed hawk (illustration, next page).

A white-haired woman, of the generation which wore aigrettes as a headdress, lingered over a portrait of two snowy egrets spreading lacy feathers in a green marsh, secure from hunters after milliners' supplies. That *rara avis,* a Supreme Court Justice, created a momentary flutter among the other spectators.

Birds One Will Never See Except in Pictures or Museums

Three seventh-grade school girls held a beauty contest to select their favorite picture. One chose the roseate spoonbill, despite his shovel-shaped bill almost as ungainly as his red legs, because of the pink down that flushes his white plumage like a sunset. The second liked four nesting flamingoes. The third picked out a baby saw-whet owl, fat and fluffy enough to bounce.

Seven passenger pigeons, grouped in a single picture completed in 1917, recall that this blue and rose bird, with longer neck and tail than common pigeons, is now extinct. Another painting showed the heath hen, also extinct. Mr. Brasher's pictures focused attention too on the thinning ranks of the Carolina paroquet, the ivory-billed woodpecker, the Labrador duck, and the Ross's goose.

In the past century John James Audubon has become an almost legendary giant

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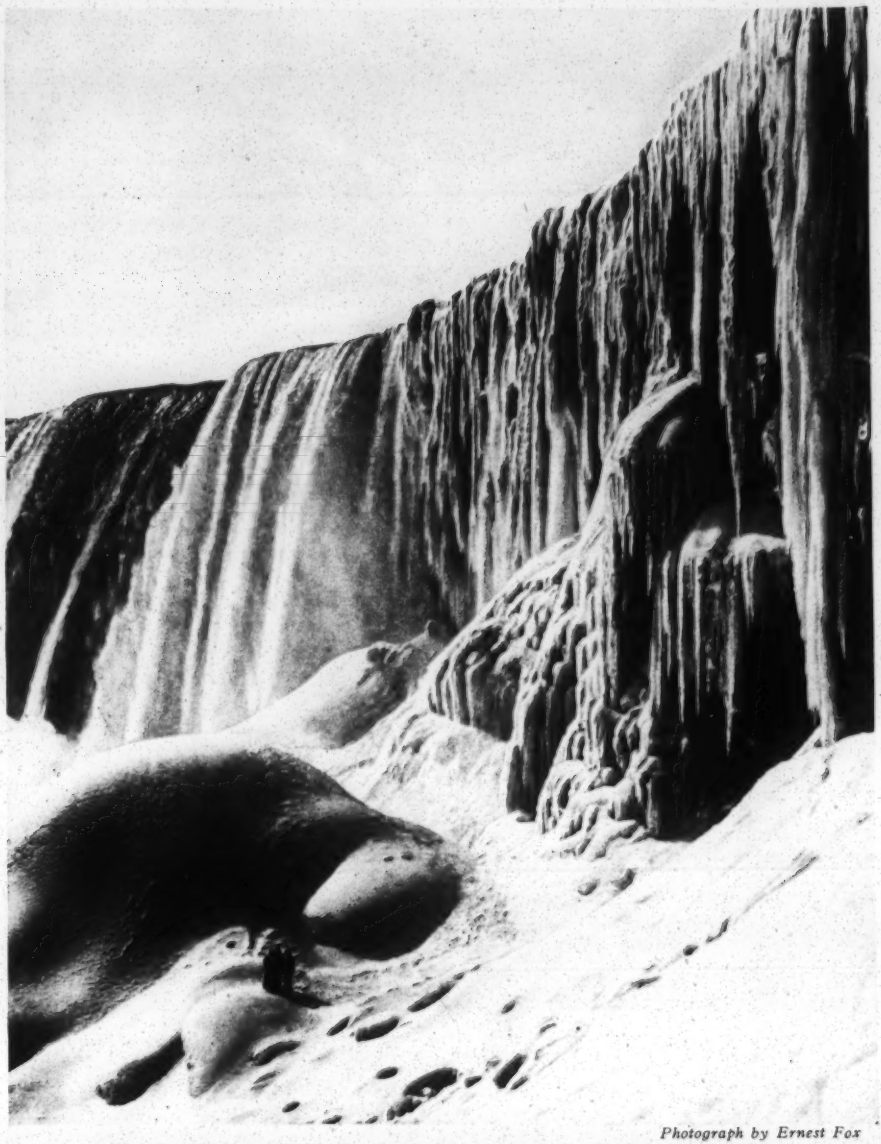
an Empire within a Republic," *National Geographic Magazine*, November, 1933; "Ontario, Next Door," August, 1932; and "Seeing America with Lindbergh," January, 1928.

See also in the GEOGRAPHIC NEWS BULLETINS: "How Long Will Niagara Falls Last?" week of January 7, 1935.

Bulletin No. 1, February 14, 1938.



Photograph by Ernest Fox

NIAGARA IN WINTER IS GENERALLY SCENIC; NOT DESTRUCTIVE

Fairyland grottoes lurk behind long organ pipes of ice which hang from the brink of the cataract. The rounded domes (left foreground) are formed by layer upon layer of frozen spray built up over a period of weeks. Sometimes these miniature mountains attain a height almost equal to that of the Falls themselves. Here the Canadian or Horseshoe Falls still has a good flow of water (upper left). The three persons in the foreground have just completed a tour of the ice caverns (right).

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Glasgow To Be Site of 1938 Empire Exhibition

A MINIATURE British Empire is rising in smoky Glasgow's southern suburbs. Masons and steel workers are busy completing pavilions for the displays of the Empire Exhibition which will open in May and continue for six months.

Glasgow is not only Scotland's largest city, but also the second largest in Great Britain, with a population of more than 1,120,000 and ample accommodations for an expected 20,000,000 visitors.

This grim, gray, industrial city, overhung with coal smoke, is largely of recent growth. Laborers in drab attire throng its streets. It lacks the beauty and historical associations of Edinburgh, but it is close to the picturesque Trossachs and the Burns country.

Once Shallow Clyde Brings Sea Commerce to Its Doors

Situated 47 miles west of Edinburgh and about 350 miles northwest of London, Glasgow can be easily reached from all parts of Great Britain. Moreover, although located inland on the narrow river Clyde, it is a foremost British port. Transatlantic steamers can bring visitors and cargo direct to its docks.

Glasgow exports coal, and makes textiles, chemicals, and machinery. But its name and fame are chiefly linked with steel shipbuilding. Shipyards on the Clyde have launched some of the world's largest liners and battleships. Two of every three British steamers are either built, or fitted with engines, on the Clyde. Today, about forty naval and one hundred merchant vessels are under construction.

At Glasgow, the Clyde is churned by ferries, freighters, and passenger steamers. Traffic plies the numerous bridges overhead. On the shores, trucks and wagons rumble along extensive quays, transporting raw materials from warehouses to factories. Less than a century and a half ago the Clyde was so shallow here that a child could wade across it. Today, one watches deep-draft ocean liners plowing down it and marvels at the engineering project which scooped out this water highway.

Owing to the Clyde shipbuilding industry, marine engineering displays will be outstanding among those in the Palace of Engineering. This edifice, covering five and one-half acres, will be the largest in the exhibition. Near it, the Palace of Industry is approaching completion. Between the two buildings will be an artificial lake, brilliantly lighted at night.

Sole Permanent Structure Will Be Art Gallery

The Empire Exhibition will spread over not only the 144 acres of Bellahouston Park, but also the adjacent Ibrox Park. Dominating the "big show" will be a tower 300 feet tall, rising in the park's center from the summit of Bellahouston Hill, itself 170 feet high. On the tower's three observation galleries, six hundred sightseers may assemble at once to look down on the pavilions, the city, and off to the Highlands.

Displays are planned to show the resources and progress of the British Empire. Pavilions are being erected by the British Government, Ireland, Canada, South Africa, Australia, and New Zealand. Exhibits are being sent from the West Indies, West Africa, and Malaya.

Probably none of these will attract more attention from visitors than the

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in the study of American bird life, largely for his great work "Birds of America." He identified fewer than 500 species. His pioneer work, however, blazed the way for later painters of birds in natural poses and surroundings, such as Major Allan Brooks, Louis Fuertes, and Rex Brasher. Mr. Brasher has profited by improved roads and new trails leading into remote or once inaccessible regions to cover more territory than Audubon did. The half-century of scientific study intervening between Audubon and Brasher has helped the latter to prepare pictures of species not even known by the earlier master, and to avoid mistakes in classification. Brasher's work includes over twice as many species and sub-species as Audubon painted.

"Birds and Trees of North America" is the complete title of Mr. Brasher's work, for feathers flash, as in nature, against woodland backgrounds. The Carolina paroquet is perched on a geiger tree, chickadees hover over a branch of red cedar, the cedar waxwings alight on a western choke cherry, the red-shouldered hawk glares from a persimmon tree. Robin the Redbreast carols from a stump, while his mate swings on a branch of scarlet haw.

The masked Bob White struts around his desert territory in the sparse shade of a cactus plant crowned with one flaming blossom. Two whippoorwills blend with shadows of a twilight grove dotted with the wraithlike white flowers of bloodroot.

Note: The major species of birds of North America, north of Mexico, are portrayed in the 2-volume *Book of Birds*, issued in 1937 by the National Geographic Society. Paintings by Major Allan Brooks are reproduced on 204 pages of full color, showing 950 birds and 633 species. In addition, the *Book of Birds* contains 228 photographs of bird life and 17 migration maps. The pictures, maps, and 37 accompanying articles are indexed. The *Book of Birds* is sold for $5 postpaid the set, consisting of two volumes which cannot be sold separately. It can be obtained only from the Washington, D. C., headquarters of the National Geographic Society.

Bulletin No. 2, February 14, 1938.

Photograph by Paul Pryor

"IMITATION IS THE SINCEREST FORM OF FLATTERY"

Phillips Mitchell, 8-year-old son of Mr. and Mrs. S. P. Mitchell of Washington, D. C., and a 3rd-grade student, tries to out-Brasher Brasher on the Red-Tailed Hawk. Dropping in to see the bird paintings at Explorers' Hall, the young left-handed artist forgets the airplanes that he previously preferred and sketches birds, wishing meanwhile for crayons or colored sand to copy the bright feathers in the hawk's plumage. Mr. Brasher himself was only two years older than the youngster above when he began his earliest studies of bird life.

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The Potomac River, Where North Meets South

FLOOD control is recognized as a pressing need when waters rage. But often when floods subside, control efforts do likewise. Washington, D. C., however, is building dikes while the sun shines, so that a rising Potomac at the next flood stage may not wander at will to destroy.

So many government buildings and parks lie within reflection distance of the Potomac that protective earth walls and fills will be built to riverproof the famous Federal Triangle group of structures, the Washington Monument and grounds, and the large Navy and Munitions Buildings.

The Potomac is subject to attacks of spring swellings, caused by rains and melting mountain snows, for the river reaches her arms far up into the laurel-laden, pine-clad Appalachians. The historic Potomac, in its 450 miles, glides and tumbles in turn past panoramas of mountain, forest, and fertile plain.

Scene of Indian Warfare

Indian canoes first swept down its rapids (illustration, next page) and glided over glassy reaches. In the search for farm lands beyond the mountain barriers, frontiersmen in buckskins followed its windings. Canal boats carried produce over a riverside route fostered by George Washington. Today the banks of the Potomac and its branches offer nearly level pathways for railroads and highways through the folded hills.

The turbid, lashing waters of today are mild woes compared to those that the human history of the region records. Wars and massacres were common occurrences a century and a half ago as Indians and white men juggled control of the Potomac Valley. Where the Antietam joins the greater stream, warlike Delawares and Catawbas spilled each other's blood in savage bush fights. Decades later, red-skinned foes made common cause against invading white pioneers. Log-built forts gave scant shelter against tribesmen roused to anger in defense of their hunting grounds.

More recently, the gray line of Lee and the blue of McClellan wavered back and forth across the Potomac during the Civil War.

Where the noisy Shenandoah foams down to join the Potomac under the shadow of steep heights, stands Harpers Ferry, scene of John Brown's famous raid on a Government arsenal. Out of the incident came the catchy song that fired marching columns with fighting fervor.

Georgetown Older Than Washington

Farther down the river, at Great Falls, old locks remain of George Washington's Potomac Canal, forerunner of the Chesapeake and Ohio Canal. Today, the long-unused towpath gives hikers an easy trail along the shaded river banks away from the congestion of city life.

Still lower, where the river meets the tide, Georgetown, half a century old when Washington was born, sprawls over the hills. Here old mansions reflect the rich life of past years, when official and diplomatic society ebbed and flowed over their doorsills. Many considered Washington simply as the official seat of government and Georgetown the place to live.

The Nation's white monuments to Washington and to Lincoln, most striking landmarks of one of the world's handsomest capital cities, are reflected in the Potomac. Washington spreads up from an elbow of the Potomac where the swift young

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typical Highland Village. This will adjoin two Scottish buildings showing the history of the Scots.

Unlike the permanent structures at the Wembley Exhibition of 1924, all those at Glasgow will be temporary, with the exception of one. The Palace of Arts will be retained as another much-needed art gallery. This is expected to account for $200,000 of the total of $50,000,000 to be spent on preparing the grounds and buildings of the Exhibition.

Note: See also "Low Road, High Road, Around Dundee," *National Geographic Magazine*, April, 1936; "Clans in Kilt and Plaidie Gather at Braemar," (color insert) August, 1935; "Vagabonding in England," March, 1934; and "Edinburgh, Athens of the North," August, 1932.

See also in the GEOGRAPHIC NEWS BULLETINS the following articles about Scotland: "A Bobbie Burns Birthday Tour," week of January 25, 1937; "Europe Builds Inns For Youthful Travelers," week of April 1, 1935; "Dunfermline Gave the World the 'Star-Spangled Scotchman,'" week of November 25, 1935; and "The Clyde, a Tiny River That Nurtures Sea Giants," week of October 15, 1934.

Photograph by Burton Holmes from Galloway

SCOTLAND PAYS THE PIPER FOR EVERY CELEBRATION

The merry music of the bagpipes is a feature of nearly all Scotch festivities, such as the planned Glasgow Exposition, although Scotland is not the only country with which the bagpipe is associated. This braw highlander is loyal also to another tradition, the national costume, a feature of which is the pleated knee-length kilt, belted at the waist, and the sporan, a purse of wooly sheepskin hanging from the belt in front. The costume was once forbidden by English law, and has not since been revived for general use.

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Hainan: China's Largest Island Possession

EUROPE is curious about a report that Japanese marines attempted to land on Hainan. This big Chinese tropical island is almost equidistant from the British city of Hong Kong, on China's southern coast, and the French colony of Indo-China, so it can be seen how distant Europe is concerned about its ownership or control.

European capital is also reported to be invested in the island, which had long remained a primitive tropical tangle unsubdued even by industrious Chinese colonists.

Lying 15 miles off the southern extremity of China, Hainan is almost half the size of Ireland. Yet it has no railroad system, no good port for seagoing vessels, few automobiles, and few miles of improved roads. Dangling from the peninsula of Liuchow, it hangs suspended between the Gulf of Tonkin's treacherous tides and the monsoon-swept China Sea, isolated by these dangers from the mainland.

Shaped Like an Oyster Shell

Hainan lies in about the same latitude as that of southern Cuba, or of the island of Hawaii. The island is shaped like a monster oyster shell, an oval northern coastal plain rising to a hump of mountains toward the southern end. Kiungchow, the largest town and the center of government, is a slightly modernized city with the usual landmarks of seven-story pagodas and a 20-foot battlemented wall. It lies a couple of miles inland from the port of Hoihow, on the northern coast.

Through this port the island is connected by water transport to the mainland due north. From the Kiungchow nucleus, the Chinese have been occupying a broadening crescent along the northern plain, slowly closing in on the south-central highlands. Over two million Chinese in this area now comprise most of the island's population.

The mountains, covered with tropical trees of the mahogany and the rosewood families, hide fastnesses both mysterious and untamed. Remnants of Hainan's pre-Chinese inhabitants roam the highlands, the Loi and the Miao peoples, now existing as primitive farmers or nomads.

Hainan Melons Grow on Trees

Their territory on the maps is dotted with question marks, indicating far more unknown spots than one would expect to find in an island 160 miles long by 90 miles wide, which has been occupied by the inquiring Chinese since 111 B. C., and by western missionaries off and on since the 17th century. One district, because of the popularity of monstrous lobe-distending ear plugs, was once called the country of the Hanging Ears.

The mountains of Hainan—the Lotus Range, the Red Mist Mountains, the Five Finger Mountains, and the Seven Finger Mountains—rise little more than a mile above sea level. But they are lonely enough to give rise to native stories that spirits guard their summits. From the highlands flow three rivers which are main channels of communication between the coast and the interior: the quicksandy Sang Ho to the west, the Kachek tumbling through mountain gaps to the east, and the long winding Fu Ho, the Golden River, to the north.

China profits by its tropical island which produces coconuts, betel nuts, sugar

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river becomes the fuller tidal stream. Ocean ships can ascend its broad estuary to the port of Washington.

Boundary for Three States

Mt. Vernon's familiar white porticoes top a swelling knoll 16 miles down the river from the capital (illustration, inside cover). Here, farmer George Washington developed his graceful home, surrounded it with formal gardens, and, on rich adjoining acres, raised bumper crops of potatoes and beans, fruits and tobacco.

Bays and creeks of Maryland and Virginia define the Potomac's banks from Washington to the river's mouth in Chesapeake Bay. In the annals of America struggling to be born, no region played a more important part. Only Massachusetts produced a comparable body of statesmen to help guide the new-launched ship of state.

The Potomac receives its waters from four States—West Virginia, Pennsylvania, Virginia, and Maryland. From the junction of its north and south branches until it reaches Harpers Ferry, the Potomac separates Maryland from West Virginia. From Harpers Ferry to its mouth, the boundary between Maryland and Virginia follows the south bank of the river.

Of the 245-foot fall between the Blue Ridge and tidewater, about 90 feet occur in a series of rapids and chutes 15 miles above Washington, including the 35-foot cataract of Great Falls.

Note: Additional photographs of the Potomac River will be found in "Washington, Home City and Show Place," *National Geographic Magazine*, June, 1937; "Geographic Society Honors Byrd Expedition," July, 1935; "Winter Lights and Shadows in the Nation's Capital," February, 1935; "Washington Through the Years," November, 1931; "The Color Camera's First Aerial Success," September, 1930; "Approaching Washington by Tidewater Potomac," March, 1930; "Virginia—A Commonwealth That Has Come Back," April, 1929; "The Home of the First Farmer of America," May, 1928; "The Great Falls of the Potomac," March, 1928; "A Maryland Pilgrimage," February, 1927; and "Pirate Rivers and Their Prizes," July, 1926.

Bulletin No. 4, February 14, 1938.

Photograph by Clifton Adams

CANOES STILL RACE DOWN THE "RIVER OF TRADERS"

"Traders" is a suggested interpretation of the Indian name, Potomac, which applied both to the river and the tribe living on its banks. Sport and not commerce, however, now attracts canoes to the rapids in the Potomac's main gorge below Great Falls. This area is a resort attraction of nearby Washington, D. C.

cane, Hainan melons (which grow on trees), and oranges. Indigo grows practically anywhere on the island. Rice, however, is the chief product.

The island has large but unexploited deposits of minerals, chiefly gold, silver and tin. Reported also are deposits of copper, lead, iron, and coal. There is much timber, but at present it is difficult to get logs out of the forests. With agriculture now practically Hainan's only "big business," many Chinese from the island's northern plains migrate to the Malay States and the Netherlands Indies to seek their fortunes. Their remittances to families left at home constitute Hainan's most valuable import.

Fisherman Drugs Fish or Angles with Noose

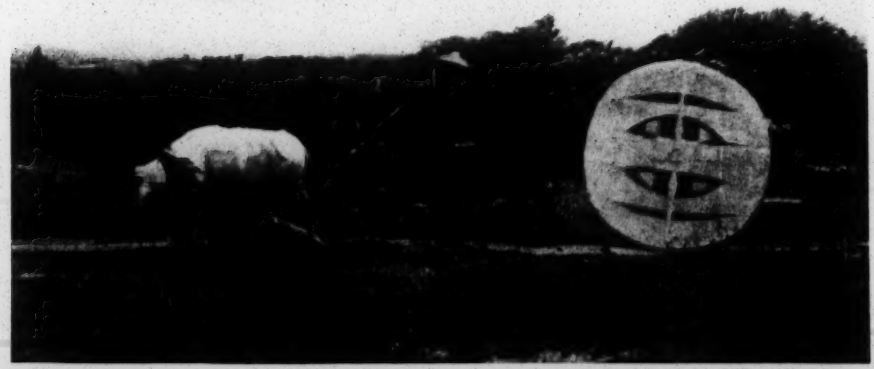
The Chinese recently announced plans for a railroad to be built encircling the island.

The rivers of Hainan, shrinking to streamlets just before flood season, are invaded for community fishing bees. Powdered poisonous bark is sprinkled on the water; then entire villages wade in to gather the drugged fish. At other times, the native in his dugout canoe angles with a noose, not a hook, on the end of his line. Coastal fishing combines with the west coast sea-salt industry to add salt fish to the foodstuffs exported from Hainan to the mainland.

Herons in the river reeds, green-winged parrots, the ant-eating pangolin scaled like a pine cone, tree-swinging monkeys, and large turtles are as much a part of the tropical landscape as the orchids, air ferns, and coconut trees. A silent but insidious member of Hainan's animal family is the bloodleech, transferring unnoticed to its victim from the lush vegetation. Deer in the mountains are the favorite game of the highland hunters. Herds of half-wild water buffalo are occasionally rounded up for transportation on the island and for export to the mainland as tanned hides and tallow.

Note: See also "Landscaped Kwangsi, China's Pictorial Province," *National Geographic Magazine*, December, 1937; and "Coastal Cities of China," November, 1934, which contains a map (page 603) on which the Island of Hainan may be located in the lower left hand corner.

Bulletin No. 5, February 14, 1938.



Photograph by Clifford H. Pope

WOODEN CART WHEELS ARE BUILT IN LAYERS FROM TOP TO BOTTOM

Rapid transit on Hainan is represented by a wheelbarrow ride, for one wheel can travel faster than two over the island's roads. Shipping progresses by sail and pole, in little flat-bottomed junks that hoist large rectangles of matting in hope of a breeze. Land transport creaks along at a water buffalo's pace, in the typical small cart (above) hidden between two massive wooden wheels which are twice as high as the buffalo. Instead of spokes radiating from hub to rim, the wheels consist of layers of wood fastened side by side, as if the wheel were whittled from a barn door. For speedy delivery, the wise man carries his own burden stowed in two baskets at opposite ends of a pole over his shoulders.

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